Measurements.

Width of sternum between outer ends of coracoid grooves,	45· mm.
Width of sternum at middle,.....	39·
Distance between coracoid grooves,.....	5·
Length (approximate) of femur,.....	126·
Transverse diameter of shaft at middle,.....	12·5
Transverse diameter of distal end,.....	26·

The remains on which this species is established are likewise from the Post-pliocene deposits of Monmouth County, New Jersey.

Yale College, New Haven, August 28th, 1872.

Art. XXXII.—*On the Oviducts and Embryology of Terebratulina*; by Edward S. Morse, Ph.D. With Plate III.

For several years past I have made a special study of the Brachiopoda. The publication of the results of these investigations has been purposely delayed, till I could incontestably demonstrate the genital nature of the Cuvierian hearts, so plainly shown to be oviducts by Hancock and Huxley, and till something at least could be given of the embryology of some brachiopod. For these two matters I have visited Eastport, Maine, for the third time, and now my heretofore fruitless endeavors have been met with success.

The results of these observations were communicated at the 19th of June meeting of the Boston Society of Natural History.

I had before seen the ciliary lining of the oviducts in Lingula and Terebratulina, but I wished to see the eggs in their actual passage through the tubes. This I have now repeatedly observed in Terebratulina. The eggs were seen discharged from the sinuses in the pallial membrane, afterward floating freely in the perivisceral cavity; the eggs were then seen gathered at the trumpet-shaped mouth of the oviduct, and have been watched as they were slowly passing through the tube and have been caught as they were discharged at the external orifice. These eggs have then been followed in their development until they assumed the form of a deeply annulated embryo, composed of four distinct rings, which had a marked vermian contraction upon each other. At this stage they appeared to be attaching themselves by the caudal segment. During the latter part of this examination my embryos were unfortunately lost. I had not the neccessary appliances to keep the water at the frigid temperature they were accustomed to, and the increased temperature of the water led to a rapid development of Paramæcia, and other infusoria, and my poor embryos were ruthlessly eaten

up. I have, however, nearly three hundred outlines of the embryos during their development, a few of which are presented with this brief communication. Next year it is hoped a complete history of their development will be made, as many things have been observed in their proper management of which I shall profit in my next attempt.

There was also discovered prominent glands at the external openings of the oviducts in Terebratulina, which I have every reason to believe represent the testes. These glands surrounded the external orifice of the oviducts, which protruded somewhat from the anterior walls of the body, and the glands were invariably found filled with spermatozoa.

From Eastport, Maine, I hurried to the St. Lawrence, with the hopes of securing some data regarding the embryology or early stages of another brachiopod found there, *Rhynchonella psittacea*. I was altogether too late for this, but had the pleasure of studying *Rhynchonella alive*, to note the ciliary action in the oviducts driving currents outward, and to establish the correctness of Owen's supposition that the arms of Rhynchonella can be protruded. A jar of specimens dredged by Dr. P. P. Carpenter, who kindly accompanied me from Montreal, was left standing undisturbed for twenty-four hours, when one of the specimens protruded its arms their entire length from the partially opened shells. I poured the sea water carefully out, and suddenly poured in the strongest alcohol, and the specimen is now preserved in this exerted position.

John E. Gavit, Esq., and Dr. Thomas T. Sabine of New York, followed all my examinations at Eastport. In a forthcoming memoir of the Boston Society of Natural History all the details of these examinations will be given.

Explanation of Plate III.

Genitals.

Figure 1. Glandular organs supposed to be testes, seen from below.

" 2. Portion of left oviduct with its relation to the supposed testis. *a*, oviduct. *b*, its external opening. *c*, testis.

" 3. Left oviduct as it appears from the front through perivisceral wall. *a*, oviduct. *b*, its external opening. *c*, internal opening. *d*, ovaries in pallial membranes. *e*, left divaricator muscle. F. F. F. Eggs entering, passing through, and escaping from oviduct.

" 4. Right oviduct seen from behind. *a*, intestine. *b b*, anterior occlusor muscles. *c*, oviduct. *d*, internal mouth of oviduct held in the ilio-parietal band "like a landing net in its loop." *e*, ilio-parietal band. *f*, ventral mesentery. *g*, accessory heart of Hancock.

" 5. External orifice of oviduct.

Note.—The severed portion of intestine is thrown into folds, in consequence of the contraction of the outer wall of intestine.

Embryology.

Figs. 1 to 12, showing various stages of embryo.
Figs. 6 and 8, partial side views.
Figs. 7 and 11, side views.
Fig. 12, partial end view.

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EMBRYOLOGY.